BY ORDER OF THE COMMANDER
AIR FORCE MATERIEL COMMAND

AIR FORCE MATERIAL COMMAND
INSTRUCTION 62-202

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Developmental Engineering

CRITERIA FOR CRITICAL ENGINEERING POSITIONS

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This instruction implements AFI 36-1301, *Management of Acquisition Key Leadership Positions (KLP)* and facilitates the implementation of Department of Defense (DoD) guidance from DoDD5000.52, *Defense Acquisition, Technology, and Logistics Workforce Education, Training and Career Development Program*. This instruction establishes minimum core criteria for use in selecting personnel for Critical Engineering Positions (CEP), Key Leadership Positions (KLPs), and for evaluating incumbents in these positions. Additional criteria may be added to the minimum core criteria by the selection authority. This instruction does not apply to Air National Guard units or members. It also does not apply to Air Force Reserve units or members. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, Management of Records, and disposed of in accordance with (IAW) Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through the appropriate functional chain of command. This publication may be supplemented at any level, but all Supplements must be routed to the OPR of this publication for coordination prior to certification and approval. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items.

SUMMARY OF CHANGES

This document removes all references to contractors providing critical engineering position services. It adds a new category of covered positions called science and technology (S&T) chief engineer; modifies guidance for dealing with nonconformance; removes language limiting the instruction to Product and Air Logistics Centers; more clearly identifies the responsibilities of commanders (CCs)/civilian leaders (CLs) and organization senior functionals; makes the terminology more consistent; establishes a reporting requirement; modifies the definitions, as used in this instruction, of knowledge, skill, and ability; reflects the 5-Center reorganization; references Key Leadership Positions (KLPs), and adds a Glossary of Terms.

1. Purpose. AFMC is committed to ensuring the personnel assigned to critical engineering positions have the knowledge, experience, and professionalism to serve in their capacities and perform their duties in the highest interest of the Air Force. To help accomplish this purpose, this instruction establishes the core criteria to be used as quality ranking factors for selection by the selecting authority for civilian service assignments or by the reviewer/supervisor for military assignments. This instruction does not apply to civilian Senior Executive Service (SES), Senior Level (SL), and Scientific and Professional (ST) positions, or general officer positions and does not supplant any existing regulation or policy.

2. Applicability.

2.1. **Positions.** The titles below are reserved for the roles defined within this instruction. all positions that meet the title definitions herein must have Unit Manning Document (UMD) codes assigned per **paragraph 3.2.2.** Positions that do not meet these definitions cannot use the duty titles in paragraph 2, unless approved by the AFMC Science and Engineering (S&E) Center or Laboratory Senior Functionals (S&E CSFs). This instruction is mandatory for all

Chief Engineer, Director of Engineering, S&T Chief Engineering, Technical Director and select Lead Engineer positions as defined below.. These duty titles are intended to convey engineering or technical leadership responsibility within the scope of the assignment, regardless of whether the individual assigned is military or civilian.

2.1.1. Lead Engineer (LE). A Lead Engineer (LE) is the senior engineer at the Branch or Integrated Product Team (IPT) level (4-Letter level). The LE directly supports the Chief Engineer (CE) or a Deputy Program Manager (DPM) or Branch Chief, and is responsible to implement sound systems engineering technical processes on assigned systems, sub-systems, or commodities. In addition, the LE provides technical advice to their CE, DPM, or Branch Chief and ensures engineers within their organization are executing their roles and responsibilities appropriately. The use of the Lead Engineer duty title is limited to those individuals on positions with significant system, sub-system, or commodity responsibility and/or authority, ", as determined by the Chief Engineer or Organization Senior Functional (OSF) An LE is typically a direct report to the CE, a DPM, or the Branch Chief.

2.1.2. Chief Engineer (CE). A Chief Engineer (CE) is the senior engineer at the Division level (3-Letter level) or, the senior engineer of an ACAT 1 program, regardless of its organizational level. The CE directly supports the Program Manager (PM) or Division Chief (if not a PM), and is responsible to implement sound systems engineering technical processes on assigned systems and on behalf of the PM, is responsible to ensure Operational Safety, Suitability, and Effectiveness of assigned systems. In addition, the CE provides technical advice to their PM or Division Chief and ensures Lead Engineers within their organization are executing their roles and responsibilities appropriately. A CE is typically a direct report to the PM or Division Chief (if not a PM).

2.1.3. Director of Engineering (DOE). A Director of Engineering (DOE) is the senior engineer at the Directorate level (2-Letter level). The DOE directly supports the Program Executive Officer (PEO) or Director (if not a PEO), and is responsible to ensure sound systems engineering technical processes are being implemented and OSS&E is being addressed on systems assigned to their Directorate. In addition, the DOE provides technical advice to their PEO or Director and ensures Chief Engineers within their organization are executing their roles and responsibilities appropriately. A DOE is typically a direct report to the PEO or Director (if not a PEO).

2.1.4. S&T Chief Engineer. The senior AFRL laboratory or technology directorate (TD) Technical Engineering Authority. This position provides systems engineering, program management, and engineering counsel to the AFRL Commander and/or TD Director as applicable. It defines the scope and rigor of system engineering and program management processes, policies, training, and tools; and ensures implementation of best practices and compliance with Laboratory and higher headquarters policies through technical engineering management. It tailors and applies OSS&E and Mission Assurance principles to AFRL programs as appropriate.

2.1.5. Technical Director. A senior engineer technical specialty position; provides expertise on technical aspects supporting operations & processes.

2.2. **Position Types.** This instruction applies to civilian and military positions identified in **paragraph 2.1**

2.3. **Grade Levels and Ranks.** This instruction applies to both civilian positions at GS-15 equivalent and below and military positions at the rank of colonel and below.

3. Responsibilities and Authorities.

3.1. **S&E CSFs have the responsibility and authority to implement this instruction at their Centers.**

3.1.1. Vacant Positions. S&E CSFs shall ensure the Centers implementation of this instruction in filling vacancies for positions described in **paragraph 2.**

3.1.2. Encumbered Positions. S&E CSFs will review the job related skills and experience of the individuals encumbering the positions described in **paragraph 2** to determine if they meet the core criteria of **Attachment 1**. For any discrepancies found, S&E CSFs will work with the individuals to bring them in conformance with **Attachment 1** criteria, in accordance with **paragraph 4.2**

3.1.3. Course lists. S&E CSFs will establish, maintain, and make available to the S&E work force lists of courses that provide knowledge level competency for the criteria listed in **Attachment 1**. In order to provide knowledge level competency, a course must adequately cover the process or processes, the tools available, and the possible metrics for the competency.

3.1.4. Final authority.

3.1.4.1. S&E CSFs are the final authority in determining the applicability of this instruction to a position as defined in **paragraph 2.**

3.1.4.2. S&E CSFs are the final authority in determining whether an individual or candidate meets the criteria of **Attachment 1** or in determining what additional actions are needed to meet the criteria of **Attachment 1**.

3.2. **CCs/ CLs**ictect**and Unit Senior Functionals for Science and Engineering**.

3.2.1. With S&E CSF guidance and coordination, implement this instruction in their unit.

3.2.2. With S&E CSF guidance and coordination, identify positions meeting the definitions in **paragraph 2** and code the positions using the following duty title codes in the 'Duty Title' field on the UMD.

3.2.2.1. 356 – Technical Director

3.2.2.2. 805 – Chief Engineer

3.2.2.3. 806 – Lead Engineer

3.2.2.4. 807 – Director of Engineering (DOE)

3.2.2.5. 809 – S&T Chief Engineer

4. Procedures.

4.1. **Vacant Positions.**

4.1.1. General. S&E CSFs will ensure candidates selected to fill positions described **in paragraph 2** meet the minimum core criteria of **Attachment 1**.

4.1.2. Criteria. In selecting personnel, the selecting authority will evaluate each candidate against the criteria in **Attachment 1**. Candidates meeting all of the criteria will be approved for further consideration. If there are insufficient candidates meeting all of the criteria in **Attachment 1** for adequate competition, as determined by local procedures, the selecting authority or official will select from the candidate list those coming closest to meeting the **Attachment 1** criteria for further evaluation. Candidates projected to meet all **Attachment 1** criteria within a grace period equal to the grace period allowed by the Acquisition Professional Development Program (APDP) (currently 24 months) will be ranked as partially meeting the criteria. If there are insufficient candidates capable of meeting **Attachment 1** criteria within the grace period, the selecting authority will seek to extend the area of consideration to obtain a larger candidate pool.

4.1.2.1. Individuals not meeting criteria.

4.1.2.1.1. Individuals selected for critical engineering positions, as defined in **paragraph 2**, will meet the criteria in **Attachment 1** (except the education criteria) within a grace period equal to the grace period allowed by APDP, or management will reassign them to a position not covered by this instruction unless a waiver as described in **paragraph 6.** is granted.

4.1.2.1.2. S&E CSFs will encourage selected individuals to meet the education requirements in **Attachment 1** within a grace period equal to the grace period allowed by APDP. If individuals do not accomplish the education outlined in **Attachment 1** within the allocated timeframe, CCs/ CLs, in coordination with S&E CSFs, will request a waiver as described in **paragraph 6** to document the nonconformance.

4.1.2.2. Additional Criteria. S&E CSFs may add other job-related criteria to the **Attachment 1** criteria. If this occurs, S&E CSFs shall post the additions such that all employees are notified and shall set appropriate cut-off dates for the additional criteria.

4.1.2.3. Program Phase. Some of the criteria in **Attachment 1** vary depending on whether the program is primarily in a material solution analysis, technology development, engineering & manufacturing development, production & deployment, or operations & support phase.

4.1.2.4. KSA Levels. The Knowledge, Skill, and Ability (KSA) criteria are expressed in terms of these KSA levels:

4.1.2.4.1. Knowledge - An academic or related training, understanding of the ideas, concepts, principles, theories, and techniques of a subject matter.

4.1.2.4.2. Skill - Demonstrated experience, to process, translate, interpret, and apply a subject matter effectively and readily in varied situations.

4.1.2.4.3. Ability - Demonstrated accomplishment, relative to a subject matter, to apply concepts, synthesize, and make decisions based on the overall "system" characteristics--i.e., systems engineering focus of a decision.

4.1.2.4.4. Individual Competencies. **Attachment 2** provides guidance and

clarification for evaluating KSA criteria. This attachment is not part of the criteria but may be used as an aid in evaluating individuals against the KSA criteria and in developing courses that cover individual KSA criteria. It correlates commonly recognized competencies with each of the KSA criteria.

4.1.2.4.5. Relation to APDP Certification. In evaluating individuals against **Attachment 1** KSA criteria, APDP certifications may be used as evidence of meeting certain knowledge or skill competencies. **Attachment 3** shows what specific APDP certifications may be used as evidence of meeting specific **Attachment 1** KSA criteria. APDP certification may not be used as evidence of meeting ability-level competency. **Attachment** 3 is not part of the core criteria but may be used as evidence of meeting specific **Attachment 1** KSA criteria.

4.2. **Encumbered Positions.**

4.2.1. Individuals encumbering critical engineering positions, as defined in **paragraph 2**, will meet the criteria in **Attachment 1** (except the Education criteria) within a grace period equal to the grace period allowed by APDP, or management will reassign them to a position not covered by this instruction unless a waiver as described in **paragraph 6** is granted.

4.2.2. S&E CSFs will encourage personnel encumbering positions covered by this instruction to meet the education requirements in **Attachment 1** within a grace period equal to the grace period allowed by APDP. If individuals do not accomplish the education outlined in **Attachment 1** within the allocated timeframe, CCs/ CLs, in coordination with S&E CSFs, will request a waiver as described in **paragraph 6** to document the nonconformance.

5. Key Leadership Positions (KLPs).

5.1. **In accordance with the DoDD 5000. 52, Key Leadership Positions (KLPs) are a subset of Critical Acquisition Positions (CAPs).** KLPs include positions that require special Office of the Under Secretary of Defense (Acquisition, Technology and Logistics) (OUSD (AT&L)) and Service Acquisition Executive (SAE) attention with regard to qualifications, accountability, and tenure. In general, KLP incumbents have direct responsibility for, and direct influence on, the success of an acquisition program, acquisition system, or major technical area of responsibility.

5.2. **The engineering positions listed below are designated as mandatory KLPs for ACAT I and IA programs.** These positions may be associated exclusively with a single program or be shared across multiple programs:

5.2.1. Chief Engineer/Lead Systems Engineer (Program Lead, Engineer).

5.3. **KLPs benefit from broad experience within the following cross-functional competencies: Executive Leadership, Program Execution, Technical Management, and Business Management.** These cross-functional competencies are defined below:

5.3.1. Executive Leadership consists of demonstrated competencies in leading change, leading people, managing results, building coalitions, business acumen, and an enterprise-wide perspective. The DoD leader competency framework provides the governing model. Refer to DoD Instruction 1430.16, “Growing Civilian Leaders.”

5.3.2. Program Execution is the leadership and management of a defense acquisition program covering every aspect of the acquisition process, such as integration, engineering program control, test and evaluation, deployment configuration management production and manufacturing, quality assurance, and logistics support.

5.3.3. Technical Management is the organization, governance, and effective application of current technology, acquisition practices, design, and security considerations in building/acquiring and maintaining large complex systems.

5.3.4. Business Management is the oversight of controlling, leading, monitoring, organizing and planning for the business success of a program. This includes achieving best value to the Government.

6. Waivers. HQ AFMC/EN may grant waivers to this instruction. CCs/CLs (for Wing organization structures), in coordination with S&E CSFs, or S&E CSFs (for Directorate or soon-to-be Directorate organization structures) shall submit waiver requests with justifications in writing to HQ AFMC/EN.

7. Reporting Requirements. S&E CSFs with identified positions as described in **paragraph 2.** shall report to HQ AFMC/ENR bi-annually (typically in the both January and July)) on the number of positions identified, the number of persons on identified positions who meet the **Attachment 1** criteria (as of the end of the prior month), the number of persons on identified positions who do not meet the **Attachment 1** criteria (show deadline by which date employee must achieve compliance), the number of identified positions occupied by someone on a waiver as described in **paragraph 6.** above, the number of fills on vacancies of identified positions during the bi-annual period, and the number of those fills where the person selected met the **Attachment 1** criteria.

GAIL P. FOREST, SES
Director, Engineering and Technical Management

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

DoDD5000.52, *"Defense Acquisition, Technology, and Logistics Workforce Education, Training and Career Development Program,"* January 12, 2005

DoDI5000.66, "*Operation of the Defense Acquisition, Technology, and Logistics Workforce Education, Training, and Career Development Program,"* December 21, 2005

Memorandum for Secretaries of the Military Departments Component Acquisition Executives Directors of the Defense Agencies, *"Key Leadership Positions and Qualification Criteria,"* November 08, 2013

AFI 36-1301, "*Management of Acquisition Key Leadership Positions (KLP)*," October, 19, 2015

Prescribed Forms

None

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

AACSB—Association to Advance Collegiate Schools of Business

ABET—Accreditation Board for Engineering and Technology

ACAT I—Acquisition Category I

ACBSP—Accreditation Council for Business Schools and Programs

AFRL—Air Force Research Laboratory

APDP—Acquisition Professional Development Program

CEP—Critical Engineering Position

CE—Chief Engineer

CL—Civilian Leader

CRRA—Capability Review and Risk Assessment

CSF—Center Senior Functional

DOE—Director of Engineering

DPM—Deputy Program Manager

DPEO—Deputy Program Executive Officer

HQ AFMC/EN—Headquarters, Air Force Materiel Command, Engineering and Technical Management

IPT—Integrated Product Team

KLPs—Key Leadership Positions

KSA—Knowledge, Skill, and Ability

LE—Lead Engineer

NASPAA—National Association of Schools of Public Affairs and Administration

OSF—Organization Senior Functional

OSS&E—Operational Safety, Suitability and Effectiveness

PEO—Program Executive Officer

PM—Program Manager

S&E—Science and Engineering

SAE—Service Acquisition Executive

SES—Senior Executive Service

SL—Senior Level

ST—Scientific and Professional

TD—Technology Directorate

UMD—Unit Manning Document

Terms

Competency—A measurable pattern of skills, knowledge, ability, behavior, and other characteristics which an individual needs to perform work, roles, or occupational functions successfully.

End-item—The final combination of assemblies, components, parts, and materiel that performs a complete operational function and needs no further augmentation to make it ready for its intended use.

Engineering Degree—1. A Bachelor's Degree in an engineering discipline (not engineering technology) from an engineering program currently accredited by the Accreditation Board for Engineering and Technology (ABET).

Or— 2. Current licensure as a professional engineer in the United States or its territories.

Or—3. A Master's or Doctorate Degree in an engineering discipline from a department that administers at least one ABET currently accredited undergraduate engineering (not engineering technology) program.

Reviewer/supervisor—The first level supervisor for a civilian position or the person responsible for the Officer Performance Report for a military position.

Advanced Degree (Technical) –—A Master's or Doctorate Degree in an engineering discipline from a department that administers at least one engineering (not engineering technology) program currently accredited by of the Accreditation Board for Engineering and Technology (ABET).

Or— 1. A Master's Degree or Doctorate in computer science from a department that administers at least one computer science program currently accredited by ABET.

Or—2. A Master's Degree or Doctorate in physics, geophysics, hydrology, chemistry, computer science, or metallurgy from an institution currently accredited by a regional accrediting organization recognized by the Council for Higher Education Accreditation.

Advanced Degree (Technical, Business, or Administration) ––1. A Master's or Doctorate Degree in an engineering discipline from a department that administers at least one engineering (not engineering technology) program currently accredited by the Accreditation Board for Engineering and Technology (ABET).

Or—2. A Master's Degree or Doctorate in computer science from a department that administers at least one computer science program currently accredited by the ABET)

Or— 3. A Master's Degree or Doctorate in physics, geophysics, hydrology, chemistry, computer science, or metallurgy from an institution currently accredited by a regional accrediting organization recognized by the Council for Higher Education Accreditation.

Or— 4. A Master's Degree in a program currently accredited by the AACSB International – The Association to Advance Collegiate Schools of Business (AACSB) or by the **Accreditation Council for Business Schools and Programs** (ACBSP).

Or—5. A Master of Military Operational Art and Science, Master of Airpower Art, or Science and Master of Strategic Studies degree conferred by Air University.

Or—6. A Master's Degree in Administration-Logistics Management from an institution currently accredited by a regional accrediting organization recognized by the Council for Higher Education Accreditation.

Or—7. A Master's Degree in a program currently accredited by the National Association of Schools of Public Affairs and Administration (NASPAA).

Product Technical Management Experience—Two or more years working in acquisition or sustainment of a system or an end item.

S&E Center Senior Functional (S&E CSF)—The senior official within the Center science and engineering staff function aligned under the Center Commander. The S&E CSF is not considered a Director of Engineering as used in this instruction.

Selecting authority—Managers and supervisors with the authority to hire from selection certificates or the person with decision authority for a management reassignment.

System—A specific grouping of subsystems, commodities and/or components designed and integrated to perform a military function.

Technical Degree ––1. A Bachelor's Degree in an engineering discipline (not engineering technology) from an engineering program currently accredited by the Accreditation Board for Engineering and Technology (ABET).

Or—2. A Bachelor's Degree in physics, geophysics, hydrology, chemistry, computer science, or metallurgy from an institution currently accredited by a regional accrediting organization recognized by the Council for Higher Education Accreditation.

Or—3. Current licensure as a professional engineer in the United States or its territories.

Or—4. A Master's or Doctorate Degree in an engineering discipline from a department that administers at least one engineering (not engineering technology) program currently accredited by of the Accreditation Board for Engineering and Technology (ABET).

Or—5. A Master's Degree or Doctorate in computer science from a department that administers at least one computer science program currently accredited by ABET.

Or—6. A Master's Degree or Doctorate in physics, geophysics, hydrology, chemistry, computer science, or metallurgy* from an institution currently accredited by a regional accrediting organization recognized by the Council for Higher Education Accreditation. * Substantiating documentation should be available as to the need for metallurgy as a qualifying factor.

Unit Commander (CC)/Civilian Leader (CL)—The individual who reports directly to the Center or Laboratory Commander and is responsible for the execution of all programs within the unit.

Unit Senior Functional for Science & Engineering—The senior science and engineering functional position within a unit to include wings, groups, and squadrons (the senior functional may reside anywhere within the unit or its subordinate units).

Attachment 2

CRITICAL ENGINEERING POSITION CORE CRITERIA

Table A2.1. Core Criteria Elements.

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director
UMD Duty Code		806	805	807	809	356
Experience				Displays leadership in field and depth/ breadth of understanding	Displays leadership in field and depth/ breadth of understanding	Displays leadership in field and depth/ breadth of understanding
				Experience in managing engineering resources across all technical disciplines.		Shows breadth and depth of experience in scientific or engineering specialty
			Prior product technical management experience	Prior product technical management experience	Prior S&T and/or product technical management experience and/or S&T or product engineering experience.	
KLP specific requirements			8 years acquisition experience or equivalent			
			3 years experience in PMO or equivalent			
			5 years supervisory / team lead experience			
			Demonstrated performance in leading engineering activities on a program			

	Description	**Lead Engineer**	**Chief Engineer**	**Director of Engineering (DOE)**	**S&T Chief Engineer**	**Technical Director**
Education		Technical Degree	Technical Degree	Technical Degree	Technical Degree	Technical Degree
- - Engineering & Manufacturing Development or Production & Deployment Programs			Applicable Advanced Degree (Technical)	Applicable Advanced Degree (Technical, Business, or Administration)		Applicable Advanced Degree (Technical)
- - Operations & Support Programs				Applicable Advanced Degree (Technical, Business, or Administration)		Applicable Advanced Degree (Technical, Business, or Administration)
- - Material Solution Analysis or Technology Development Programs					Applicable Advanced Degree (Technical, Business, or Administration)	
Certifications						
- APDP		Functional area and level required for the position	Functional area and level required for the position	Functional area and level required for the position	Functional area and level required for the position	Functional area and level required for the position
Knowledge, Skills, and Abilities*						
- Engineering Specialty	Recognized technical expert in a functional specialty, with experience in making critical, and technologically relevant decisions.					
- - Primary area		Ability	Ability	Ability	Ability	Ability
- - Other areas		Knowledge	Knowledge with increasing breadth	Knowledge with increasing breadth	Knowledge with increasing breadth	Knowledge with increasing breadth

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director
- Systems Engineering	Understanding of the interdisciplinary approach encompassing the entire set of scientific, technical, and managerial efforts needed to evolve, verify, deploy (or field), and support an integrated and life-cycle balanced set of system solutions that satisfy customer needs. Focuses on an iterative, disciplined method which includes requirements analysis, requirements allocation, design synthesis, and technical management processes in a new capabilities-based construct. Have the ability to understand how systems engineering is applied to the joint arena.	Skill	Ability	Ability		Ability
	Understanding of the interdisciplinary approach encompassing the entire set of scientific, technical, and managerial efforts needed to develop and mature technologies that satisfy customer needs. Focuses on an iterative, disciplined method which includes requirements analysis, requirements allocation, design synthesis, and technical management processes in a new capabilities-based construct. Have the ability to understand how systems engineering is applied in the S&T environment.				Ability	
- Test and Evaluation	Skills used to manage test and evaluation within a program office or an S&T demonstration program including planning, monitoring, and evaluating test results. Analyze, assess and evaluate test data and test reports with the ability to prepare written reports of the findings. Have the ability to understand how test and evaluation is applied to AF and joint programs.	Skill	Ability	Ability	Ability	Skill

	Description	**Lead Engineer**	**Chief Engineer**	**Director of Engineering (DOE)**	**S&T Chief Engineer**	**Technical Director**
- Capability-Based Requirements/Customer Needs	Focus on system requirements as derived from a capabilities-based assessment, such as the Capability Review and Risk Assessment (CRRA) process, (utilizing tools such as modeling, simulation, *etc.*). Customer-centric consideration in concert with most viable solution to achieve capability-based results.	Knowledge	Skill	Ability	Ability	Skill
- System Development	Understanding of the relevant issues within system development. Functional disciplines necessary to execute a technically superior program include attention to varied activities (which may include, but not limited to system integration, system level architecture, manufacturing, quality assurance, product certification, system safety, human factors and environmental issues, *etc.*).					
- - Engineering & Manufacturing Development or Production & Deployment Programs		Skill	Ability	Ability	Knowledge	Ability
- - Operations & Support Programs		Knowledge	Skill	Skill		Skill
- - Material Solution Analysis or Technology Development Programs	Understanding of the relevant issues within system development in S&T environment. Functional disciplines necessary to execute a technically superior S&T program.				Ability	
- Sustainment	Understanding the role of sustainment within the system lifecycle. This key competency focuses on utilizing integrated products and processes (including but not limited to engineering support requests, mishap reporting/accident investigation, tech insertion, work specs, *etc.*) in the development, production, supportability, and product support of Air Force systems.					
- - Engineering & Manufacturing Development or Production & Deployment		Knowledge	Skill	Skill		Skill
- - Operations & Support Programs		Skill	Ability	Ability		Ability

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director
- - Material Solution Analysis or Technology Development Programs					Knowledge	
- Acquisition	Understanding and applying acquisition strategies in the conceptualization, initiation, design, development, test, contracting, production, deployment, logistic support, modification, sustainment and disposal of weapons and other systems, supplies or services. Includes understanding the process of planning, organizing, monitoring, overseeing and performing engineering activities relating to the development, production, and/or modification of a system and recognition of the need to establish and implement acquisition engineering objectives, policies and specification guidelines necessary for a robust system design.	Skill	Ability	Ability		Skill
	Understanding and applying acquisition strategies related to appropriations categories consistent with level of S&T program activities (Basic, Applied, or Advanced Research)				Skill	
- Program Management	Skills/Processes used to manage and develop a system level product and/or develop/mature technologies in an S&T program." (May include skills and tools that manage resources and outcomes such as Earned Value Management System, Integrated Master Plans, Integrated Master Schedules, *etc*. Areas addressed include, but are not limited to, program execution, technical planning, technical risk management, and decision analysis)	Knowledge	Skill	Skill	Skill	Knowledge

	Description	**Lead Engineer**	**Chief Engineer**	**Director of Engineering (DOE)**	**S&T Chief Engineer**	**Technical Director**
- Leadership	Skills that focus on leadership and management (fundamental leadership skills, leading change, leading people, results driven, building coalitions, business acumen, and enterprise-wide perspective). Models organizational improvements and technological innovations through new programs/processes.	Skill	Skill	Ability	Ability	Ability
- Technical Management	Skills used to organization, governance, and effective application of current technology, acquisition practices, design, and security considerations in building/acquiring and maintaining large complex systems. Areas addressed include, but are not limited to the following: technical management, requirements analysis, integration, design considerations, technical assessment, and configuration/interface management.	Skill	Skill	Ability	Ability	Ability
- Business Management	Skills used to provide oversight in controlling, leading, monitoring, organizing, and planning for the business success of a program. Includes achieving best value for the Government.	Skill	Skill	Ability	Ability	Ability

* **Knowledge =** An academic, or related, training understanding of the ideas, concepts, principles, theories, and techniques of a subject matter.

Skill = Demonstrated experience to process, translate, interpret, and apply a subject matter effectively and readily in varied situations.

Ability = Demonstrated accomplishment relative to a subject matter, to apply concepts, synthesize, and make decisions based on the overall "system" characteristics--i.e., systems engineering focus of a decision.

Attachment 3

KEY ENGINEERING POSITION MINIMUM CRITERIA

Table A3.1. Knowledge Skill and Ability KSA Competencies.

	Knowledge, Skill, and Ability Area								
Competency	**- Engineering Specialty***	**- Systems Engineering**	**- Test and Evaluation**	**- Capability-Based Requirements/ Customer Needs**	**- System Development**	**- Sustainment**	**- Acquisition**	**- Program Management**	**- Leadership**
- - Building Coalitions									**X**
- - Business Acumen									**X**
- - Configuration Management		**X**			**X**	**X**	**X**	**X**	
- - - Data Management		**X**	**X**		**X**	**X**	**X**	**X**	
- - - Interface Management		**X**	**X**		**X**	**X**		**X**	
- - Contracting Process/Management			**X**			**X**	**X**	**X**	
- - Cost Estimating		**X**		**X**	**X**		**X**	**X**	
- - Earned Value Management		**X**			**X**		**X**	**X**	
- - Effective Communication Skills	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
- - Engineering Discipline Awareness		**X**	**X**	**X**	**X**			**X**	
- - Engineering Support Requests						**X**			
- - Environmental Issues		**X**	**X**	**X**	**X**	**X**	**X**	**X**	
- - Familiarity with Military, International, & Industry Specifications & Standards (e.g., MIL, ISO, IEEE, ANSI)		**X**		**X**	**X**		**X**	**X**	
- - Financial Management			**X**			**X**	**X**	**X**	
- - Hardware/ Software Design Methodology		**X**	**X**		**X**				

	Knowledge, Skill, and Ability Area								
Competency	**- Engineering Specialty***	**- Systems Engineering**	**- Test and Evaluation**	**- Capability-Based Requirements/ Customer Needs**	**- System Development**	**- Sustainment**	**- Acquisition**	**- Program Management**	**- Leadership**
- - Human Factors		**X**			**X**				
- - Independent Technical Review Leadership		**X**	**X**		**X**			**X**	**X**
- - Integration		**X**	**X**	**X**	**X**	**X**	**X**	**X**	
- - Integrity Programs		**X**			**X**	**X**			
- - Leading an IPT		**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
- - Leading Change		**X**							**X**
- - Leading People		**X**	**X**					**X**	**X**
- - Logistics Management		**X**	**X**	**X**	**X**	**X**	**X**		
- - Manufacturing/QA		**X**	**X**		**X**	**X**	**X**	**X**	
- - Mishap Reporting/ Accident Investigation		**X**	**X**	**X**	**X**	**X**			
- - Modeling, Simulation, and Performance Analysis		**X**	**X**	**X**	**X**				
- - Modification Management				**X**		**X**	**X**	**X**	
- - ORM		**X**	**X**	**X**			**X**	**X**	
- - Program Objective Memorandum (POM) Process & Execution							**X**	**X**	
- - Process Engineering		**X**	**X**			**X**	**X**	**X**	
- - Reducibility		**X**			**X**		**X**		
- - Product Certification		**X**	**X**	**X**	**X**	**X**	**X**	**X**	
- - Project Planning		**X**	**X**	**X**		**X**	**X**	**X**	
- - Reliability & Maintainability		**X**	**X**	**X**	**X**	**X**		**X**	
- - Requirements Management		**X**	**X**	**X**	**X**	**X**	**X**	**X**	
- - Results Driven				**X**					**X**
- - Risk Management		**X**	**X**	**X**	**X**	**X**	**X**	**X**	

	Knowledge, Skill, and Ability Area								
Competency	**- Engineering Specialty***	**- Systems Engineering**	**- Test and Evaluation**	**- Capability-Based Requirements/ Customer Needs**	**- System Development**	**- Sustainment**	**- Acquisition**	**- Program Management**	**- Leadership**
- - System Interoperability		**X**		**X**	**X**				
- - Systems Architecture		**X**		**X**	**X**		**X**		
- - System Safety		**X**	**X**	**X**	**X**	**X**	**X**	**X**	
- - Technical Performance Measures		**X**	**X**	**X**	**X**		**X**	**X**	
- - Technical Reviews & Audits		**X**	**X**		**X**	**X**	**X**	**X**	
- - Technology Insertion		**X**	**X**	**X**	**X**	**X**	**X**	**X**	
- - Trade-Off Studies		**X**		**X**	**X**		**X**	**X**	
- - Work Specs						**X**	**X**		

* The position description determines the competencies for Engineering Specialty.

Attachment 4

TABLE A4.1 KNOWLEDGE AND SKILL LEVEL COMPETENCY VS. APDP CERTIFICATION.

APDP Certification			Knowledge, Skill, & Ability Area								
Functional Area		Level	- Engineering Specialty	- System Engineering	- Test and Evaluation	- Capability-Based Requirements/ Customer Needs	- System Development	- Sustainment	- Acquisition	- Program Management	- Leadership
Information Technology		II							**K**		
Life Cycle Logistics	Acquisition Logistics	II						**K**	**K**		
	Sustainment	II						**K**	**K**		
		III						**S**	**S**		**K**
Program Management		II							**K**	**K**	
		III				**K**			**S**	**S**	**K**
Systems Planning, Research Development & Engineering (SPRDE)	Science & Technology Manager	II		**K**		**K**	**K**		**K**		**K**
		III		**S**		**K**	**K**		**K**		**S**
	Program System Engineer	II		**S**			**S**	**K**	**S**		
		III		**S**		**K**	**S**	**K**	**S**		**K**
	Systems Engineering	II		**K**			**K**	**K**	**K**		
		III		**S**		**K**	**S**	**K**	**S**		**K**
Test & Evaluation		II			**K**				**K**		
		III			**S**				**S**		**K**

NOTES:

1. A K or S indicates APDP certification in the functional area and at the indicated level constitutes evidence of knowledge-level or knowledge and skill-level competency in the indicated Knowledge, Skills, & Abilities area.

K = Knowledge

S = Knowledge & Skill

2. This table indicates KSA achievement and is to be used as an evaluation tool. It is not necessary to acquire all certifications.